

WHAT I CLAIM IS:

56. A method for joining two parts of hollow organs or segments of same hollow organ, at any anatomical location, over an annular area defined on a chosen plane in each of the two parts, whereby each part has an opening through the respective plane essentially inside the respective annular area under conditions of closed surgery, using laparoscopic or thoracoscopic techniques, performed on a patient; the method sequentially comprising the steps of-

- a) providing a flexible annular stapler having two interacting and possibly invertible round jaws;
- b) inserting said two interacting jaws through the mouth of said patient into a first one of the two parts and advancing said jaws to where one jaw is inside the first part and the other jaw is inside the second one of the two parts, each jaw being substantially near the respective chosen plane for said joining;
- c) for each of the two parts, either shrinking the opening so as to form an at least partially closed butt that encloses the respective one of said jaws, or pressing the tissue surrounding the opening to form a pair of adjoining lips so as to enclose the respective one of said jaws and stapling said lips together by means of a linear stapler, and
- d) operating said annular stapler so as to pull the two said butts together and essentially combine the two annular areas into a combined annular area, to staple the two parts of hollow organs or segments to each other over said combined annular area and to cut away portions of said butts that are central to said combined annular area so as to realize either an end to end, end to side, side to end or side to side joint.

57. The method of claim 56, wherein at least one additional surgical operation is performed between steps (a) and (d).

58. The method of claim 56, wherein the steps (a) to (d) are superseded by the following steps:

- a) providing a flexible annular stapler comprising two interacting round jaws and an inflatable balloon at the top of said stapler;
- b) inserting said balloon and said jaws into a first one of the two parts while making use of said inflatable balloon for dilating the path in said parts; advancing said jaws to where one jaw is inside the first part and the other jaw is inside the second one of the two parts, each jaw being substantially near the respective chosen plane for said joining;
- c) for each of the two parts, either shrinking the opening so as to form an at least partially closed butt that encloses the respective one of said jaws, or pressing the tissue surrounding the opening to form a pair of adjoining lips so as to enclose the respective one of said jaws and stapling said lips together by means of a linear stapler, and
- d) operating said annular stapler so as to pull the two said butts together and essentially combine the two annular areas into a combined annular area, to staple the two parts of hollow organs or segments to each other over said combined annular area and to cut away portions of said butts that are central to said combined annular area so as to realize either an end to end, end to side, side to end or side to side joint.

59. The method of claim 58, wherein said inserting is effected through a natural opening of the patient's body.

60. The method of claim 58, wherein at least one additional surgical operation is performed between steps (a) and (d).

61. A method for joining two parts of hollow organs or segments of same hollow organ, over an annular area defined on a plane in each of said two organs or segments, under conditions of closed surgery using laparoscopic or thoracoscopic techniques, performed on a patient; the method comprising the steps of-

- (a) providing a flexible annular stapler having a flexible body, two round jaws and a flexible cable slidable through said body and through a first one of said jaws and having an end protrudable from said first jaw, said second one of said jaws being attachable to said end of said cable, said second jaw being initially detached;
- (b) inserting said first one of said jaws into a first one of the two parts of hollow organs, advancing said first jaw to where it is inside the first part near the respective plane and causing said end of said cable to protrude from said first part;
- (c) introducing said second jaw into a closed thoracic or abdominal cavity through the patient's body wall and attaching it in the inside of said closed cavity to said end of said cable;
- (d) having said second jaw inside the second one of the two parts of hollow organs and having each of the two parts form an at least partially closed butt at or near the respective plane, said butt enclosing the respective one of said jaws; and
- (e) operating said annular stapler so as to pull the two said butts together and essentially combine the two annular areas into a combined annular area, to staple the two parts of hollow organs or segments to each other over said combined annular area and to cut away portions of said butts that are central to said combined annular area so as to realize either an end to end, end to side, side to end or side to side joint.

62. The method of claim 61, wherein said inserting is effected through a natural opening of the patient's body.

63. The method of claim 61, wherein at least one of the two parts of hollow organs has an opening through its respective plane essentially inside the respective annular area, the method further comprising, for each of the two parts, the step of shrinking the opening so as to form an at least partially closed butt.

64. The method of claim 63, wherein said shrinking includes, with respect to each of the two parts, pressing the tissue surrounding the opening to form a pair of adjoining lips and stapling said lips together by means of a linear stapler.

65. The method of claim 61, further comprising, prior to step (c), the step of causing said end of said cable to protrude into the second one of the two parts of hollow organs.

66. The method of claim 61, wherein at least one surgical operation is performed between steps (a) and (e).

67. A method for joining two parts of hollow organs or segments of same hollow organ, over an annular area defined on a plane in each of the two parts, under conditions of closed surgery performed on a patient; the method comprising the steps of-

- (a) providing a flexible annular stapler having a flexible body, two round jaws and a flexible cable slidable through said body and through a first one of said jaws and having an end protrudable from said first jaw, the first one of said jaws being

- attachable to said body and the second one of said jaws being attachable to said end of said cable, both of said jaws being initially detached;
- (b) inserting said flexible body into a closed thoracic or abdominal cavity through the patient's body wall;
 - (c) introducing said first jaw into a closed thoracic or abdominal cavity through the patient's body wall and attaching it in the inside of said closed cavity to said flexible body;
 - (d) introducing said second jaw into a closed thoracic or abdominal cavity through the patient's body wall and attaching it in the inside of said closed cavity to said end of said cable;
 - (e) having said first jaw inside the first one, and said second jaw inside the second one, of the two parts of hollow organs or segments and having each of the two parts form an at least partially closed butt at or near the respective plane, said butt enclosing the respective one of said jaws; and
 - (f) operating said annular stapler so as to pull said two butts together, to staple the two organs or segments to each other over the annular areas and to cut away portions of said butts that are central to the annular areas.

68. The method of claim 67, wherein at least one of the two parts of hollow organs has an opening through its respective plane essentially inside the respective annular area, the method further comprising, for each part having an opening, the step of shrinking the opening so as to form an at least partially closed butt.

69. The method of claim 68, wherein said shrinking includes pressing the tissue surrounding the opening to form a pair of adjoining lips and stapling said lips together by means of a linear stapler.

70. The method of claim 67, further comprising, prior to step (c), the step of having said flexible body protrude into one of the two parts.

71. The method of claim 67, further comprising, prior to step (d), the step of having said end of said cable protrude into one of the two parts.

72. The method of claim 67, wherein at least one surgical operation is performed between steps (a) and (f).

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